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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/670,408 | 09/25/2003 | Xiaolan Ai | TIMK 8497US | 5738 |
| 1688 | 7590 | 03/08/2006 | EXAMINER | |
| POLSTER, LIEDER, WOODRUFF & LUCCHESI 12412 POWERSCOURT DRIVE SUITE 200 ST. LOUIS, MO 63131-3615 | | | LE, DAVID D | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3681 | |

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/670,408 | AI, XIAOLAN | |
| | Examiner | Art Unit | |
| | David D. Le | 3681 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 16 December 2005.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-6,8-11 and 13-21 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 1-6,10,11 and 19 is/are allowed.
- 6) Claim(s) 8,9,13,15,16,18,20 and 21 is/are rejected.
- 7) Claim(s) 14 and 17 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 September 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is the fourth Office action on the merits of Application No. 10/670,408, filed on 25 September 2003. Claims 1-6, 8-11 and 13-21 are pending.

Documents

2. The following documents have been received and filed as part of the patent application:

- Information Disclosure Statement, received on 12/29/03
- Information Disclosure Statement, received on 03/19/04

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 8-9, 13, 15, 16, 18 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 3,945,270 to Nelson et al. in view of U. S. Patent No. 2,407,975 to J. D. Christian.**

Claims 8-9, 13, 15, 16, 18 and 20-21:

Nelson (i.e., Figs. 1-6; column 5, line 19 – column 11, line 52) discloses a friction drive transmission comprising:

- A plurality of planetary rollers (9, 10, 11) positioned between and in frictional contact with an outer ring member (8) and a sun roller member (6) of a planetary

traction drive such as to communicate rotational motion between the outer ring member and the sun roller member;

- Wherein each of the planetary rollers is mounted on a correspondingly non-rotatable shaft (i.e., Fig. 3, element 34, 35 or 36) through a bearing (i.e., Fig. 2, element 33);
- A plurality of springs (i.e., Fig. 3, elements 45); and
- Wherein each of the springs (45) deflects the correspondingly non-rotatable shaft (34, 35 or 36).

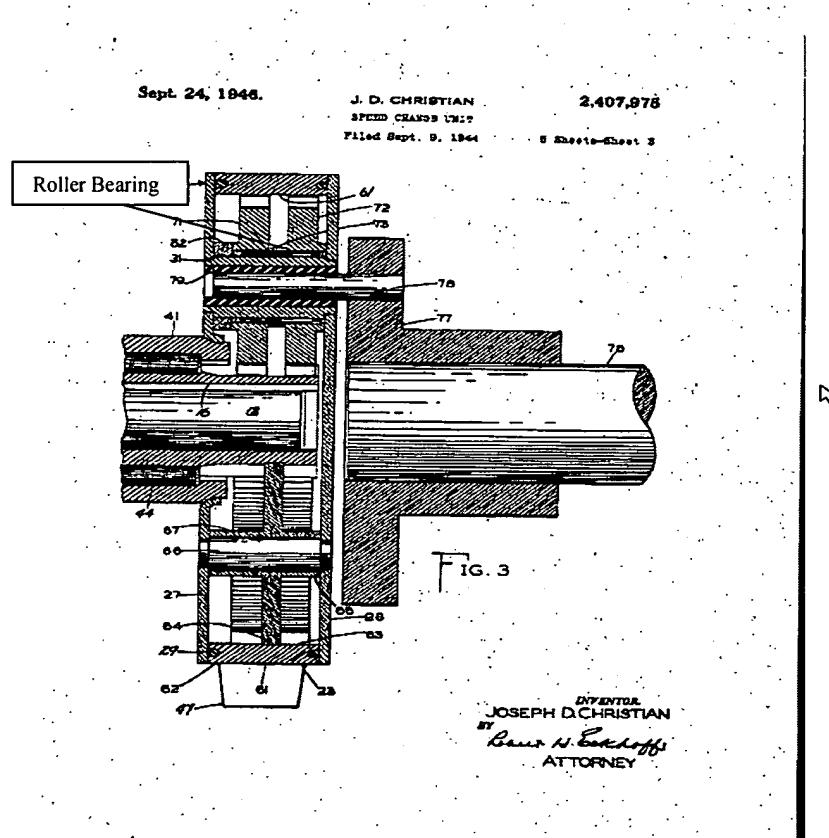
Nelson lacks:

- Wherein each of the planetary rollers includes a means for flexibly mounting the planetary roller onto a fixed support shaft such that the means biases a center of the planetary roller towards a center of the support shaft, thereby pushing and pulling the planetary roller into and out of a convergent wedge so that the traction drive can operate under any small wedge angle at or close to a maximum available friction coefficient;
- Wherein the fixed support shaft includes an elastic insert;
- Wherein the fixed support shaft is located within the elastic insert;
- Wherein the elastic insert is located within the bearing;
- Wherein the flexible mounting includes a predetermined travel range that limits an operating friction coefficient at or close to the maximum available friction coefficient; and

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- Wherein the means for flexibly mounting biases the center of the roller to the center of the fixed support shaft with tangential friction force F at contact points between the roller and the two raceways balanced by normal contact forces N at the contact points and a supporting force F_0 at the supporting shaft.

Christian (i.e., Figs. 3 and 4; column 3, line 59 – column 4, line 15), on the other hand, teaches a speed change unit comprising:



- A plurality of elastic inserts (i.e., Fig. 3, elements 79);
- Wherein each of the planetary rollers includes an elastic insert for flexibly mounting the planetary roller onto the correspondingly fixed support shaft such that the elastic insert biases a center of the planetary roller towards a center of the support shaft;
- Wherein each of the fixed support shafts is located within each of the elastic inserts;
- Wherein each of the elastic inserts is located within each of the roller bearings;
- Wherein the elastic insert inherently biases the center of the planetary roller to the center of the fixed support shaft with tangential friction force F at contact points between the roller and the two raceways balanced by normal contact forces N at the contact points and a supporting force F_0 at the supporting shaft; and
- Wherein the elastic insert inherently includes a predetermined travel range that limits an operating friction coefficient at or close to the maximum available friction coefficient;

It would have been obvious to one of ordinary skill in the art at the time this invention was made to modify Nelson such that the spring (45) is replaced an elastic insert, the non-rotatable shafts (34, 35, 36) are fixedly supported, each of the non-rotatable shafts is located within each of the elastic inserts, and each of the elastic inserts being located within each of the roller bearings, in view of Christian, in order to improve the torque transferring capability of the friction drive transmission.

Allowable Subject Matter

5. Claims 1-6, 10, 11 and 19 are allowed.
6. Claims 14 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claims 8, 9, 13, 15, 16, 18, 20, and 21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Le whose telephone number is 571-272-7092. The examiner can normally be reached on Mon-Fri (0700-1530).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David D. Le
Examiner
Art Unit 3681
03/06/06

ddl